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NT01-002

June 25, 2004

Certificate  
JUN 30 2004  
of Correction

To: Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Attn: Publishing Division  
Certificate of Correction Branch

From: George O. Saile, Reg. No. 19,572  
28 Davis Avenue  
Poughkeepsie, N.Y. 12603

Subj: Serial No. 10/075,778      F/D 2/14/02  
Patent No. 6,741,221      Issued 5/25/04  
Inventor: Thomas Aisenbrey

### REQUEST FOR CERTIFICATE OF CORRECTION

Dear Sir:

Pursuant to 37 C.F.R. 1.322, a Certificate of Correction is requested for the above identified issued US Patent.

Due to an Office mistake, the first provisional application number was reproduced incorrectly on the cover sheet. The complete and correct first provisional application number is --Provisional application No. 60/317,808, filed on Sep. 7, 2001--. It is clear the mistake was made by the Office because the provisional number was correct on the first page of the specification and as shown at column 1, line 10 of the issued patent 6,741,221.

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1 JUL 2004

A copy of the Form is attached.

Form PTO-1050 has been completed, as required by MPEP S1485, indicating the correction to the first provisional application number. No fee is included since this error was due to an Office mistake. Please issue the Certificate of Correction to correct this error.

If there are any questions, please contact the undersigned attorney at (845) 453-5863. Thank you for your attention to this matter.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'SBA', with a long horizontal flourish extending to the right.

Stephen B. Ackerman, Reg. No, 37,761

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# DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

DOCKET NO. INT91-002

As a below named Inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**Low Cost Antennas Using Conductive Plastics Or Conductive Composites**

the specification of which (check one)

☒ is attached hereto.

was filed on \_\_\_\_\_

Application Serial No. \_\_\_\_\_

and was amended on \_\_\_\_\_

(if applicable)

I hereby state that I have reviewed and understand the contents of the above Identified specification including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed:

(Number)	(Country)	(Day/Month/Year Filed)
(Number)	(Country)	(Day/Month/Year Filed)

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

<u>60/268,822</u>	<u>February 15, 2001</u>	<u>Pending</u>
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
<u>60/269,414</u>	<u>February 16, 2001</u>	<u>Pending</u>
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
<u>60/317,808</u>	<u>September 7, 2001</u>	<u>Pending</u>
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name & registration no.)

GEORGE O. SAILE: (Reg. No. 19,572), STEPHEN B. ACKERMAN (Reg. No. 37,761)

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**THOMAS A. AISENBREY**

Full name of sole or first inventor

Date

Thomas A. Aisenbrey

2/11/02

Inventor's signature

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# LOW COST ANTENNAS USING CONDUCTIVE PLASTICS OR CONDUCTIVE COMPOSITES

This Patent Application claims priority to the following U.S. Provisional Patent Applications, herein incorporated by reference:

60/268,822, filed Feb. 15, 2001

60/269,414, filed Feb. 16, 2001

60/317,808, filed Sep. 7, 2001

## BACKGROUND OF THE INVENTION

### (1) Field of the Invention

This invention relates to antennas formed of conductive loaded resin-based materials, comprising micron conductive powders or micron conductive fibers.

### (2) Description of the Related Art

Antennas are an essential part of electronic communication systems that contain wireless links. Low cost antennas offer significant advantages for these systems.

U.S. Pat. No. 5,771,027 to Marks et al. describes a composite antenna having a grid comprised of electrical conductors woven into the warp of a resin reinforced cloth forming one layer of a multi-layer laminate structure of an antenna.

U.S. Pat. No. 6,249,261 B1 to Solberg, Jr. et al. describes a direction-finding material constructed from polymer composite materials which are electrically conductive.

## SUMMARY OF THE INVENTION

Antennas are essential in any electronic systems containing wireless links. Such applications as communications and navigation require reliable sensitive antennas. Antennas are typically fabricated from metal antenna elements in a wide variety of configurations. Lowering the cost of antenna materials or production costs in fabrication of antennas offers significant advantages for any applications utilizing antennas.

It is a principle objective of this invention to provide antennas fabricated from conductive loaded resin-based materials.

It is another principle objective of this invention to provide antennas having two antenna elements fabricated from conductive loaded resin-based materials.

It is another principle objective of this invention to provide antennas having an antenna element and a ground plane fabricated from conductive loaded resin-based materials.

It is another principle objective of this invention to provide a method of forming antennas from conductive loaded resin-based materials.

These objectives are achieved by fabricating the antenna elements and ground planes from conductive loaded resin-based materials. These materials are resins loaded with conductive materials to provide a resin-based material which is a conductor rather than an insulator. The resins provide the structural material which, when loaded with micron conductive powders or micron conductive fibers, become composites which are conductors rather than insulators.

Antenna elements are fabricated from the conductive loaded resins. Almost any type of antenna can be fabricated from the conductive loaded resin-based materials, such as dipole antennas, monopole antennas, planar antennas or the like. These antennas can be tuned to a desired frequency range.

The antennas can be molded or extruded to provide the desired shape. The conductive loaded resin-based materials can be cut, injection molded, overmolded, laminated, extruded, milled or the like to provide the desired antenna shape and size. The antenna characteristics depend on the composition of the conductive loaded resin-based materials, which can be adjusted to aid in achieving the desired antenna characteristics. Virtually any antenna fabricated by conventional means such as wire, strip-line, printed circuit boards, or the like can be fabricated using the conductive loaded resin-based materials.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a perspective view of a dipole antenna formed from a conductive loaded resin-based material.

FIG. 2A shows a front view of the dipole antenna of FIG. 1 showing insulating material between the radiating antenna element and a ground plane.

FIG. 2B shows a front view of the dipole antenna of FIG. 1 showing insulating material between both the radiating antenna element and the counterpoise antenna element and a ground plane.

FIG. 2C shows an amplifier inserted between the radiating antenna element and the coaxial cable center conductor for the dipole antenna of FIG. 1.

FIG. 3 shows a segment of an antenna element formed from a conductive loaded resin-based material showing a metal insert for connecting to conducting cable elements.

FIG. 4A shows a perspective view of a patch antenna comprising a radiating antenna element and a ground plane with the coaxial cable entering through the ground plane.

FIG. 4B shows a perspective view of a patch antenna comprising a radiating antenna element and a ground plane with the coaxial cable entering between the ground plane and the radiating antenna element.

FIG. 5 shows an amplifier inserted between the radiating antenna element and the coaxial cable center conductor for the patch antenna of FIGS. 4A and 4B.

FIG. 6 shows a perspective view of a monopole antenna formed from a conductive loaded resin-based material.

FIG. 7 shows a perspective view of a monopole antenna formed from a conductive loaded resin-based material with an amplifier between the radiating antenna element and the coaxial cable center conductor.

FIG. 8A shows a top view of an antenna having a single L shaped antenna element formed from a conductive loaded resin-based material.

FIG. 8B shows a cross section view of the antenna element of FIG. 8A taken along line 8B—8B' of FIG. 8A.

FIG. 8C shows a cross section view of the antenna element of FIG. 8A taken along line 8C—8C' of FIG. 8A.

FIG. 9A shows a top view of an antenna formed from a conductive loaded resin-based material embedded in an automobile bumper.

FIG. 9B shows a front view of an antenna formed from a conductive loaded resin-based material embedded in an automobile bumper formed of an insulator such as rubber.

FIG. 10A shows a schematic view of an antenna formed from a conductive loaded resin-based material embedded in the molding of a vehicle window.

FIG. 10B shows a schematic view of an antenna formed from a conductive loaded resin-based material embedded in the plastic case of a portable electronic device.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following embodiments are examples of antennas fabricated using conductive loaded resin-based materials. In

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.  
(Also Form PTO-1050)

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,741,221  
DATED : 5/25/04  
INVENTOR(S) : Thomas Aisenbrey

It is certified that error appears in the above-identified patent and that said Letters Patent  
is hereby corrected as shown below:

On the Title page, in item (60), delete "Provisional application No. 60/317,801, filed on  
Sep. 7, 2001", and replace with --Provisional application No. 60/317,808, filed on Sep. 7,  
2001--.

## MAILING ADDRESS OF SENDER:

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Poughkeepsie, NY 12603

PATENT NO. US6,741,221

No. of additional copies



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- 1 JUL 2004